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BOTANY.—*Four new species of Myrsinaceae from China.*[1] E. H. WALKER, National Museum. (Communicated by WILLIAM R. MAXON).

The following four new species have been recognized during the examination of a large number of specimens of Myrsinaceae from eastern Asia in various American Herbaria. They are here described preparatory to a revision of the Chinese, Japanese, and Formosan members of this family.

Ardisia scalarinervis Walker, sp. nov.

Repent undershrub, about 40 cm. high, the branches ascending, densely fuscous-tomentose; leaves clustered at ends of branches, the petiole about 4 cm. long, fuscous or ferruginous-tomentose or villose, the blade 20 to 30 cm. long, 7 to 8 cm. wide, obovate or oblanceolate, tapering toward the narrowly rounded base, rather broadly acute or sub-acuminate at apex, closely erose-dentate (the teeth apiculate), prominently elevated-punctate near margin and apex on both sides, glabrous and dark green above, sparingly and minutely puberulent and fuscous beneath; midrib prominent beneath, densely shaggy with long ferruginous villose crisped hairs, the lateral nerves forming a right or obtuse angle with the midrib; inflorescence 2 to 3 cm. long, a subterminal or axillary, pubescent cluster of several peduncled umbels each about 7-flowered, the peduncles short, the pedicels slender, about 1.5 cm. long; flowers 4 mm. long; sepals shortly united at base, triangular-ovate, 1.5 mm. long, ferruginous-puberulent, minutely ciliate, not punctate; petals ovate or oblong-ovate, acute glabrous, black punctate at apex; stamens somewhat shorter than petals, the filaments very short and broad, the anthers large, sagittate, acute or submucronate; pistil with globose, hairy ovary, the style very slender, about as long as petals, the stigma punctiform; fruit a globose berry with horny endocarp, 5 to 7 mm. in diameter, reddish, minutely puberulent or glabrous, not punctate, one-seeded.

[1] Published by permission of the Secretary of the Smithsonian Institution. Received September 28, 1931.

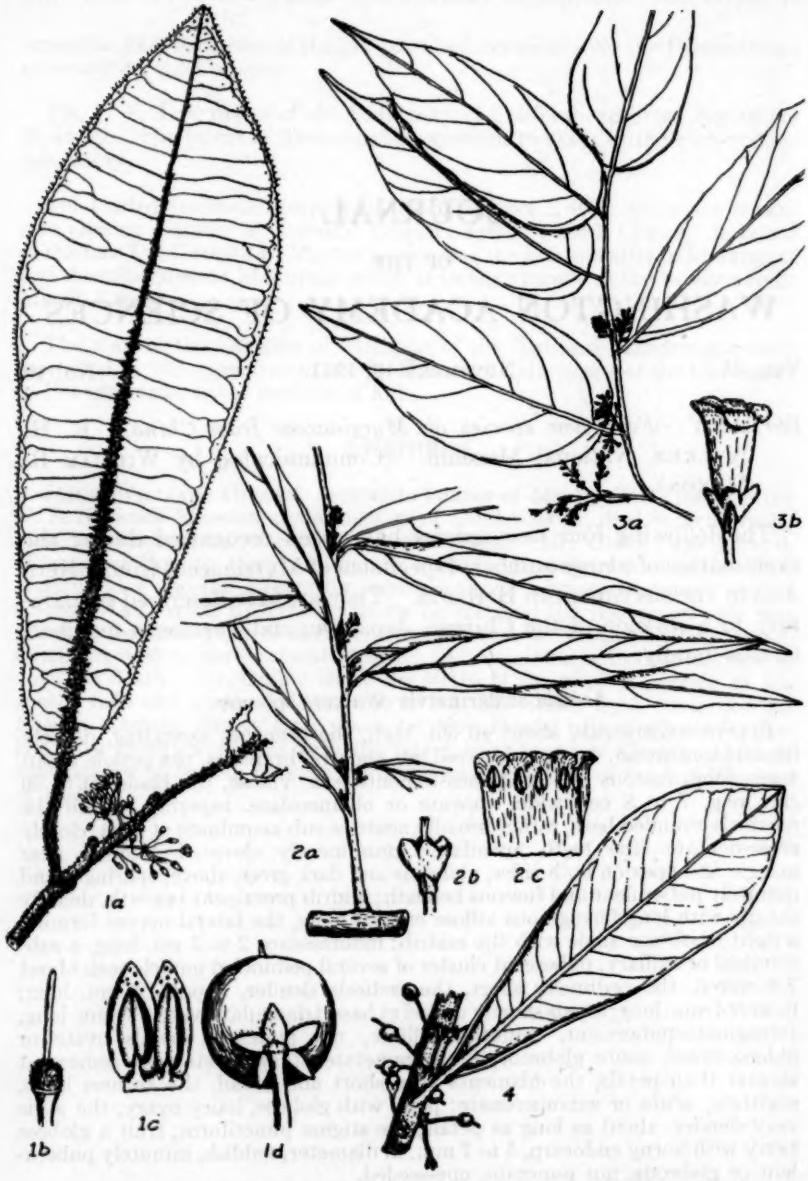

Fig. 1. *Ardisia scalarinervis* Walker, sp. nov.—*a*. branchlet with leaf and inflorescence, 2/5 nat. size; *b*. pistil, x 5; *c*, petals and stamens, x 5; *d*. fruit, x 5. Fig. 2. *Maesa salicifolia* Walker, sp. nov.—*a*. branchlet, 2/5 nat. size; *b*. flower with corolla removed, x 5; *c*. corolla opened, x 5. Fig. 3. *Maesa macilenta* Walker, sp. nov.—*a*. branchlet, 2/5 nat. size; *b*. flower, x 5. Fig. 4. *Rapanea kwangsiensis* Walker, sp. nov. —branchlet with mature fruit and leaf, 2/5 nat. size.

Type in the U. S. National Herbarium, no. 458,790, collected at Szemao, Yunnan, China, by A. Henry (no. 12,021).

This species, known only from the type, is very distinct in its oblanceolate or obovate leaves with densely shaggy midrib and in the ladderlike arrangement of the lateral nerves, which are divergent at a right angle from the midrib.

Rapanea kwangsiensis Walker, sp. nov.

Small tree or shrub, 6 meters high, the branchlets thick; leaves petiolate (1 to 2 cm.), the blade coriaceous, 11 to 14 cm. long, 4 to 5 cm. wide, obovate, gradually tapering to an acute base, broadly acute to obtuse or almost rounded at apex, entire, dark green above, paler beneath, glabrous, not punctate, except obscurely so beneath at margin; inflorescence few-flowered, developing 1 to 3 fruits, umbellate on short, densely scaly spurs or knobs, axillary, among the leaves or above the rather prominent leaf scars on older portions of the branch, the scales obtuse, entire, sometimes fringed; flowers 5 to 6-merous on slender pedicels; sepals 2 mm. long, united one-third to one-half their length, ovate, acute, entire, sometimes finely papillose on margin, otherwise glabrous, not distinctly punctate; petals united one-third their length, about 4 mm. long, narrowly oblong-lanceolate, rounded or acute at apex, punctate on back, papillose on margin and within; stamens with short filaments attached at or just above the throat of corolla tube, the anthers in pistillate flowers shorter than petals, sagittate, apiculate; pistil with ovoid ovary, the style very short, the stigma about as long as or slightly longer than the petals, flattened-ligulate, sometimes cleft at apex; fruit globular, 4 to 5 mm. in diameter, purplish, longitudinally lined with elongate, glandular punctations, the pedicels slender, 5 to 8 mm. long.

Type in the U. S. National Herbarium, no. 1,273,486, collected at "Lanlow, E. Lin Yen," Kwangsi, China, 1,500 meters altitude, August 2, 1928, by R. C. Ching (no. 6,657).

This species, known only from the type, may be easily distinguished from other Chinese species of the genus by its thicker stems, its clearly obovate large leaves having a gradually tapering base, and its fruits with longer pedicels. The type specimen, though in fruit, bore a few dried pistillate flowers from which the above flower description was drawn. It was collected on the expedition sent into Kwangsi in 1928 by the Metropolitan Museum of Natural History, Nanking, China.

Maesa macilenta Walker, sp. nov.

Shrub, 1.5 to 2 meters high, the branchlets slender, glabrous or minutely puberulent; leaves short-petiolate (5 mm.), the blade thin-membranous, 10 to 20 cm. long, 3.5 to 5 cm. wide, ovate to elliptic-lanceolate, acute or rounded at base, long-acuminate at apex, subentire or minutely sinuate-dentate, dull green on both sides, glabrous, glandular-striate, the lateral nerves 7 or 8 pairs; inflorescence 1 to 2.5 cm. long, racemose or sparingly branched-paniculate, very minutely puberulent, the bracts subulate, nearly equaling the short pedicels; flowers 2 mm. long, the bracteoles ovate to oblong; sepals shortly united at base, ovate, obtuse, entire, sometimes very minutely ciliate, not

conspicuously glandular; corolla tubular-campanulate, the tube twice as long as the sepals, 2 to 3 times the length of the ovate, rounded, irregularly margined lobes, longitudinally lined; staminate flowers unknown; stamens in pistillate flowers minute, included, the anthers ovate; pistil shorter than the corolla tube, the free part of the semi-inferior ovary conical, the style slender, less than 1 mm. long, the stigma obscurely lobed; fruit unknown.

Type in the U. S. National Herbarium, no. 458,604, collected at Szemao, Yunnan, China, by A. Henry (no. 11,704A). An additional specimen is *Henry* 11,704, in the herbarium of the New York Botanical Garden.

This species is related to *Maesa japonica* (Thunb.) Moritz in its characteristic relatively long corolla tube. However, it may be distinguished from that species by its thin, membranous leaves, its small inflorescence and flowers, and its ovate bracteoles, which are not broad and clasping. From the following new member of this group with long corolla tubes it is distinguished by its ovate or elliptic-lanceolate (not narrowly lanceolate) leaves, these thin and membranous, not coriaceous and rugose, and by its ovate bracteoles.

Maesa salicifolia Walker, sp. nov.

Erect shrub, 2 meters high, glabrous throughout, the branchlets rather slender, grayish-brown; leaves with channeled petiole (5 to 8 mm.), the blade coriaceous, 10 to 18 cm. long, 1.5 to 2 cm. wide, narrowly oblong-lanceolate, obtuse at base, long-acute or acuminate at apex, strongly revolute, entire, not punctate, rugose, the midrib and the 5 to 7 pairs of lateral, curved, ascending nerves appearing deeply impressed above, correspondingly ridged beneath, the veinlets inconspicuous; inflorescence axillary, solitary or 2 or 3 together, 1.5 to 2 cm. long, racemose or paniculate, the few branches near the base; flowers 3 to 4 mm. long, slightly longer than the pedicels, the floral parts mostly longitudinally glandular-striate, the bracteoles broadly ovate, obtuse, sometimes broadly so; sepals about 1 mm. long, imbricate, shortly united, below, broadly ovate to suborbicular, broadly obtuse or rounded, the margin thinner; corolla tubular or tubular-campanulate, the tube 3 to 4 mm. long, about 3 times the length of the sepals, the lobes short-ovate, rounded, scarcely spreading; stamens in staminate flowers included, attached at about the middle or above the middle of the corolla tube, 1 mm. long, anthers oblong-ovate, rounded at apex, about equaling the slender filaments; pistil in pistillate flowers with free part of semi-inferior ovary conical, the style slender, scarcely reaching height of anthers, the stigma slightly dilated; or obscurely lobed; fruit globose, 4 mm. in diameter, reddish longitudinally striate-punctate wrinkled, the persistent sepals approximate about the more or less persistent style.

Type in the herbarium of the New York Botanical Garden, collected on Teng Woo Mountain, Kwangtung Province, China, by C. O. Levine and G. W. Groff, Nov. 18, 1916 (Canton Christian College no. 45). Additional specimens are: *C.C.C.* 13,242 and *H. T. Ho* 60,026, both from the type locality, Teng Woo Mountain.

In its long corolla tube this species is related to *Maesa japonica*, from which, however, as well as from the preceding new species, it may be readily distinguished by its narrowly lanceolate, entire, rugose leaves. In floral characters it is at present indistinguishable from *Maesa japonica*.

ZOOLOGY.—*A new agouti from Costa Rica.*[1] E. A. GOLDMAN, Biological Survey.

Among interesting mammals recently obtained by the well known field naturalist, Mr. C. F. Underwood, in western Costa Rica, is an agouti which seems to represent a hitherto unrecognized geographic race. It is here named for the collector who has been making notable contributions to knowledge of the fauna of Costa Rica for many years.

Dasyprocta punctata underwoodi subsp. nov.
Costa Rican Agouti

Type. From San Geronimo, Pirris, western Costa Rica. No. 256459, ♂ adult, U. S. National Museum, collected by C. F. Underwood, June 1, 1931.

General characters.—An orange buff and yellow subspecies without distinctly banded pelage; longer hairs on rump reaching about 95 millimeters, mainly dusky below light orange yellow tips about 20 millimeters in length. Similar to *Dasyprocta punctata punctata* and *D. p. richmondi*, but pelage of upper parts in general much less distinctly banded, the longer rump hairs nearly uniformly dusky below light orange yellow tips (narrowly banded to base in *punctata* and *richmondi*). Very similar in color arrangement to the geographically more distant form *D. p. dariensis* of eastern Panama, but upper parts more extensively orange buff or orange yellowish; and skull lighter in structure. Differing notably from *D. p. nuchalis* of western Panama in the absence of the black nape.

Color.—Type: Top of head, nape, shoulders, sides of body and outer surfaces of limbs coarsely mixed black and light orange yellow; middle of back heavily overlaid with rich orange buff, the under color blackish; long hairs of rump blackish basally but tipped with light orange yellow in contrast with orange buff of back; under parts in general mixed brownish and pale yellowish buff, the buff becoming purer along the median line of abdomen and inguinal region; fore feet blackish; hind feet with short black and yellowish hairs on metatarsus.

Skull.—Closely resembling those of *D. p. punctata* and *D. p. richmondi* but vertical portion of maxilla between jugal and antorbital vacuity narrower in the type, more encroached upon by jugal; nasals very broad and expanded anteriorly.

Measurements.—Type: Head and body, 511 mm.; tail, 22; hind foot, 115. *Skull* (type): Greatest length, 114.2; condylobasal length, 103.7; zygomatic breadth, 51.8; interorbital constriction, 31.3; length of nasals, 41.5; maxillary toothrow (alveoli), 17.8.

Remarks.—The agoutis of the *D. punctata* group subdivide in Middle America into several closely allied, but fairly well marked geographic races. *D. p. underwoodi* is based on a single specimen which appears to be quite distinctive, as shown by comparison with neighboring forms including specimens assumed to be near typical *D. p. punctata*, the type of which probably came from western Nicaragua (See Goldman, Proc. Biol. Soc. Washington, vol. 30, p. 114, May 23, 1917).

[1] Received October 18, 1931.

ZOOLOGY.—*A new kinkajou from Mexico.*[1] E. W. NELSON and E. A. GOLDMAN, Biological Survey.

In reviewing the kinkajous of Mexico (*Potos flavus* group) the writers have noted characters which seem to warrant the recognition by name of the geographic race inhabitating the region of the Yucatan peninsula. The new form is described as follows:

Potos flavus campechensis subsp. nov.

Campeche Kinkajou

Type.—From La Tuxpeña, Champoton, Campeche, Mexico. No. 181266, ♀ adult, U. S. National Museum (Biological Survey collection), collected by Percy W. Shufeldt, February 12, 1913. X catalogue number 10234.

Distribution.—Campeche, Tabasco, northern Guatemala and probably all of Yucatan peninsula; limits of range unknown.

General Characters.—A light-colored, medium-sized subspecies, very similar in general to *Potos flavus chiriquensis* of western Panama, but lighter in color, the head, and front and sides of legs and feet less shaded with dusky; skull narrower and differing in detail. Similar in general size to *P. f. guerrerensis* of western Mexico, but upper parts less overlaid with dusky; cranial characters distinctive. Differing from *P. f. aztecus* of the Gulf slope in Vera Cruz mainly in decidedly smaller size and lighter color.

Color.—Type: Upper parts in general near clay color (Ridgway, 1912), purest on face, flanks, and outer sides of limbs, the top of head and back thinly overlaid with brown; under parts, including inner sides of limbs and under side of tail near ochraceous buff, becoming brownish abruptly along a narrow median line on the abdomen and a spot immediately behind the naked gular patch; ears thinly clothed with light buffy hairs; feet about like outer sides of limbs, not distinctly dusky as usual in the group; tail above about like back, becoming more brownish toward tip.

Skull.—Similar in general form to that of *P. f. chiriquensis*, but braincase narrower; frontal region rising similarly high anteriorly but somewhat more depressed behind postorbital processes; postorbital processes more compressed or flattened antero-posteriorly, less rounded and peg-like; bullae usually larger, more inflated anteriorly; dentition very similar. Compared with *P. f. guerrerensis* the skull is relatively narrower, more elongated; frontal region higher anteriorly, more depressed behind postorbital processes (frontal profile more evenly arched in *guerrerensis*); audital bullae much less inflated. Differing from *aztecus* in decidedly smaller size.

Measurements.—Type: Total length, 997 mm.; tail vertebrae, 513; hind foot, 90. *Skull* (type): Greatest length (median line), 95.4; condylobasal length, 88.2; zygomatic breadth, 60.8; interorbital breadth, 20; postorbital constriction, 18.8; breadth across mastoid processes, 47.2; breadth of braincase, 37.8; upper toothrow, front of canine to back of last molar (alveoli), 25.8.

Remarks.—In general combination of cranial characters *P. f. campechensis* tends to bridge the gap between *P. f. chiriquensis*, of which over 20 specimens have been available for comparison, and the more northern representatives of the *Potos flavus* group. The skull is more slender, however, than usual in the nearly related forms, and the lighter coloration appears to be distinctive.

[1] Received October 18, 1931.

Pallid coloration, apparently associated with general aridity, characterizes a considerable number of the animals of the Yucatan peninsula region and the representative there of *P. flavus* is, apparently, no exception.

Specimens examined.—Total number, 4, as follows:

Campeche: La Tuxpeña (type locality), 1.

Tabasco: Las Minas, 1 (skull only)

Guatemala: Perdida, Peten, 1 (skull only); northern Guatemala (without definite locality), 1.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

THE ACADEMY

242D MEETING

The 242d meeting of the ACADEMY was a joint meeting with the Society of Sigma Xi, and was held in the Auditorium of the Interior Department Building, F. Street, between 18th and 19th Streets, on Monday, October 26, 1931. About 400 persons were present. President N. A. COBB called the meeting to order at 8:30 P.M., and made the introductory remarks, then turned over the chairmanship to Dr. P. R. HEYL who introduced Professor WILLEM DE SITTER, Director of the Observatory at Leyden, Holland and Past President of the International Astronomical Union, who delivered an address on *The origin of the planetary system*:

The solar system shows many features that cannot be due to chance but must have an explanation in the origin of the system. All the planets move around the sun in planes that are inclined at very small angles to each other. They all move in the same direction. The satellites move around the planets in planes which again have small inclinations with the planes of their families and also in the same direction. The axial rotations of the planets and of the sun itself are in the same direction and the equatorial planes have again small inclinations from the orbital planes. All the orbits are nearly circular. The masses of the planets are small as compared with that of the sun. The masses of the satellites are small compared with those of the planets. The only two notable exceptions are our own moon of which the mass is as much as 1/80 of the mass of the earth and the rings of Saturn which are a formation that is unique in the solar system. Other exceptions, large inclinations and revolutions in the opposite direction, occur only at the very outskirts of the system or in subordinate systems. All these irregularities call for an explanation which must be found in the origin of the system.

The well known hypothesis, known by the names of Kant and Laplace, has held the field for over a century. It really consists of two hypotheses, namely, that the sun and the planets were formed by condensation from a gaseous nebula and that the planets were separated from the sun as a result of the centrifugal force due to rotation of this nebula. There are several objections to this hypothesis. In its original form it is supposed that by the rotation, a ring of matter somewhat similar to the rings of Saturn was thrown off from the equator of the rotating sun and that the planets were formed by condensation of matter constituting this ring, in one point of it. It has been shown by Darwin that this is impossible. But even omitting the ring as an intermediary stage, the hypothesis was shown to be untenable. Mathematical analysis proves that rotation can give rise to only two configurations, namely, either a double star or a spiral nebula, both of which exist in the stellar universe in many and great numbers. But rotation can never produce

a stellar system consisting of one central body attended by a number of relatively small planets.

Another theory which was already suggested by Babinet in 1861 is that the planets were thrown out of the body of the sun by the attraction of another celestial body passing at a very short distance. The first result of an encounter of this kind would be that a filament of matter was drawn out from the sun towards the passing star. This filament, after the star had passed away, would break up into different fractions some of which would be large and constitute the planets, while a considerable part of the mass of the filament would either fall back on to the sun or be dissolved into a medium of gaseous molecular constitution, which would in the course of time partly fall down on the sun and planets and partly be dissolved into space. The effect of this medium on the motion of the planets would be to make the orbits circular as the result of friction. Those parts which would fall back on the sun would impart to the sun the momentum acquired from the passing star and thus produce the rotation of the sun in the same direction as the revolution of all the planets. The orbits of the planets would be very elliptical in the beginning and only be reduced to circles gradually due to the effect of the resisting medium and only at first perihelion passage in the elliptical orbit, the satellites would be drawn out from the planet by the action of the sun in the same way as the planets were drawn out from the sun by the star.

This theory thus explains all the major features of the solar system. It explains why all motions are in the same direction and in the same plane and why all the orbits are nearly circular. The rotation of the sun and planets in the same direction and in the same plane is explained by matter falling back on them. In working it out numerically, Dr. Harold Jeffreys has found that on the whole the theory is very satisfactory, and in particular, the time required for the resisting medium to reduce the eccentricity of the orbit of Mercury to its present value agrees approximately with the age of the earth as derived from geological evidence. There is one difficulty, however, and that is that the momentum of the matter falling back is not sufficient to explain the rotation of the sun and the planets. Jeffreys, therefore, about two years ago, suggested that the encounter was not only a near approach but an actual collision between two suns, the shortest distance between the centers being of the order of 4/5 of the sum of the diameters. This would provide a sufficient explanation for the rotation while the other results from the theory would be very little changed. (*Author's abstract.*)

CHARLES THOM, *Recording Secretary.*